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CURRENT LITERATURE.

BOOK REVIEWS.

An English class book of botany.

THE EXAMINATION SYSTEM of the higher educational institutions of Great Britain seems to dominate the writing of English text-books. Some such announcement as the following may be found in the preface of most of them: "This work is primarily intended to meet the requirements of students who are preparing for the Intermediate Scientific B.Sc. and Preliminary Scientific M.B. examination of the London University, or for the Advance Stage examination of the Board of Education. But students who intend sitting for other examinations, etc." This shows how heavy a responsibility rests upon the men who set these examinations, and if the subjects and methods they demand be not the ones best suited for training a student in botany—why, so much the worse for the student! The book before us¹ consists of four parts. Part 1 (280 pages) is a description of the structure of plant "types," including the sunflower, bean, elm, mare's-tail, water-lily, maize, yucca, pondweed, pine, selaginella, two ferns, polytrichum, peltia, fucus, ulothrix, spirogyra, vaucheria, haematococcus, agaricus, pythium, mucor, eurotium, yeast, bacteria, physcia; part 2 (130 pages) is concerned with special morphology and classification of angiosperms, under which are the flower and inflorescence, pollination, fruits and seeds, and about sixty pages giving the characters of the orders of angiosperms; part 3 (cut off with 65 pages) treats of the physiology of plants, while part 4 (16 pages) is a running glossary of descriptive terms. The text is reasonably accurate, though by no means flawless, and the book is certainly a compendium of information upon the topics which it treats. As the types are studied in the reverse order from their evolution, a philosophical presentation is practically impossible. Some tables of homologies are given, but the student must hold the facts by sheer strength of memory. The illustrations, "especially drawn for the work," are for the most part extremely crude and some are quite ludicrous. One can hardly imagine that the delineator of a section of a developing ovule (*fig. 84, II*) and of physcia (*fig. 150*) ever saw these structures. The book is not one that will be of service to American students, though it may be helpful to those who are obliged to sit for British examinations.—C. R. B.

Protoplasmic streaming.

A BRIEF ABSTRACT of his extensive work upon this subject was communicated to the Royal Society in February last by Dr. Ewart. Through the gen-

¹ MUDGE, G. P., and MASLEN, A. J., A class book of botany. 12mo, pp. xvi + 512, *figs. 228*. London: Edward Arnold. 1903. 7/6.

erous financial aid accorded by the Royal Society he has been enabled to publish the full treatise at the Clarendon Press.² Dr. Ewart's observations upon protoplasmic streaming have extended over eight years. The treatise shows complete familiarity with the somewhat extensive literature bearing directly upon this topic, and the prolonged study has enabled him to review much allied work, both physical and physiological. In these days, when hasty publication is too frequent, the author's mature consideration of his theme and the contemplation of it from many sides may be taken as an example worthy of imitation.

Some conclusions of this book have already been stated in the notice of the preliminary paper.³ The study of streaming itself has brought Ewart to consider so many other aspects of cell physiology that it is not possible to summarize his conclusions without repeating the three or four pages in which he concisely does this. It must suffice to say that he discusses the influence of various external agents (including an extensive study of chemical, mechanical and etherial stimuli) on streaming; the relation between it and the other functions of the cell; the sources of energy; the influence of viscosity, and the ways in which this is modified by various agents; the analogies between streaming and molecular contraction; the transmission of stimuli and the rate of propagation; the existence of nerve fibrillae as claimed by Němec; the movements of chloroplasts; and finally the theories of streaming.

Typographically the book is issued in the same style as the classical textbooks of Sachs, DeBary, Pfeffer, and others, falling below their high standard only in the figures, which are reproduced from rather crude drawings. It would have been worth while to have a good draftsman put these into proper form. One dislikes to see unsightly illustrations in the midst of fine letter press.—C. R. B.

Biological philosophy.

SEEMINGLY almost all the fundamental problems of modern biology are at least touched upon in a curious work which has recently appeared from the hand of Krašan.⁴ The book is of a decidedly philosophical nature and is designed as a sort of introduction to broad and deep scientific thinking. Its field is to some extent similar to that of Pearson's *Grammar of Science*, but the present work deals almost entirely with the facts of botany, and the method of treatment as well as the ideas expressed are quite different from those of the *Grammar*. In Krašan's felicitous illustrations and comparisons of things seemingly dissimilar (*e. g.*, of the animate with the inanimate, etc.), is found

²EWART, ALFRED J., On the physics and physiology of protoplasmic streaming in plants. Imp. 8vo. pp. viii + 131. *figs.* 17. Oxford: Clarendon Press. 1903.

³See BOT. GAZ. 36:71. 1903.

⁴KRAŠAN, F., Ansichten und Gespräche über die individuelle und spezifische Gestaltung in der Natur. 8vo. pp. vii + 280. Leipzig: Wilhelm Engelmann. 1903. M. 6.